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Abstract

The central purpose of this study was to determine if the quantity of certain high school subjects had significant relationship to academic success or failure of male students at Stout State University. Also studied were high school rank-in-class and the American College Test (ACT) standard composite scores. The following hypotheses were stated in the null form: (1) there is no significant difference between the persister and dropped students in terms of quantity of high school units taken, (2) there is no significant difference between persisters and dropped students regarding total high school units earned, (3) there is no significant difference between persisters and dropped students regarding size of high school class, and (4) there is no significant difference between persisters and dropped students regarding high school rank-in-class and ACT scores. Results show that (1) rank-in-class is the best single predictor for success in college, and (2) the number of units earned in math and science do have an effect on the success of Stout students. (KJ)

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A LOOK AT HIGH SCHOOL UNITS AND OTHER BACKGROUND AS IT RELATES TO PERSISTERS AND DROPPED STUDENTS

Donald E. Osegard

Predicting the elements necessary to insure success in college have been the goals of many researchers. While rank-in-class has been determined to be the best single predictor, many questions remain to be answered concerning high ranking students who are failures in colleges and low ranking students who are successful. Most studies have dealt with class rank, gradepoint averages, and nonintellective factors, with little or no attention given to the number of high school units earned in certain areas.

Dailey (1957) and Steinman (1962) found that dropping out of college was the result of a combination of elements which differed according to individuals and that no single cause can be identified. When Bolstad (1965), in a study pertaining to persistance and attrition, asked in his interviews, "What was the reason for the academic problems which you had?" Twenty-three percent said that they had no problems, 44 percent gave themselves as the reason, and 33 percent stated that teachers, background, or other outside influences were the reason. Bolstad's studies also indicated that there is a greater chance for success if the student knows his vocational goal in advance. This coincided with a study made by Wood (1968) in which he showed that, "Those who remained continuously enrolled chose their college for its special curriculum and

progressive liberal outlook more often that those who were dropped. "Cook (1961) found that it did not make a great deal of difference whether a student took a college preparatory course or a non-college preparatory course, so far as grades earned in college were concerned.

Carter and McGinnis (1952) maintained that the number of units of high school credits in mathematics had a significantly high degree of predictability.

The central purpose of this study was to determine if the quantity of certain high schodl subjects had significant relationship to academic success of failure of male students at Stout State University. The number of high school units in English, industrial arts, mathematics, science, and social science were compared for both the students dropped for low scholarship and the persisters. Also studied were high school rank-in-class and the American College Test standard composite scores.

The following hypotheses were expressed in the null form; namely, that there were no significant differences at the .05 level of confidence between the groups studied with respect to the characteristics considered.

1. There is no significant difference between the persister and dropped students in terms of quantity of high school units in English, industrial arts, mathematics, science, and social science.

2. There is no significant difference between the persisters and the dropped students regarding total number of high school units earned.

3. There is no significant difference between persisters

and dropped students regarding hi h school rank-in-class.

4. There is no significant difference between persisters and dropped students regarding size of high school class.

5. There is no significant difference between persisters and dropped students regarding the American College Test standard composite scores.

The sample was selected from all male students who entered Stout State University in the fall of 1965. The students studied were those dropped for low scholarship in June 1966, and the persisters who successfully completed a four year program and are candidates for bachelor of science degree in June 1969.

Table 1 represents a summary of the total male freshman enrollment for the fall of 1965 and the sample as it relates to the groups studied.

Insert Table 1 about here

There were 530 males who matriculated at Stout State University in the fall of 1965. The population studied made up to 61.7 percent of the total, with 36.6 percent persisters and 25.1 percent dropped students. The remainder, 38.3 percent, withdrew voluntarily or left the University for other than academic reasons. They are not included in the study.

The statistical procedure was a chi square analysis of the relationship between the persisters and dropped students and the variable studied. The chi square with one degree of freedom was calculated using Yates' correction for continuity.

Results

The results of the analysis of the relationship between the persisters and dropped students, in terms of high school units earned, is presented in tables 2 and 3.

Insert Tables 2 and 3 about here

Table 2 shows the chi square analysis and table 3 the percentiles in each category. In English, the two groups were sectioned into those with 4 units or more and those with less than 4 units. The dropped students were not significantly different from the persisters, but it was interesting to note that only 8 percent of the persisters had earned less than 4 units of English in high school. In mathematics and science, the groups were found to be significantly different with chi squares of 24.916 in mathematics and 15.710 in science. This rejected the null hypothesis (1) of no difference on all the high school subjects tested. The chi square test for difference was not calculated in social science since the frequencies observed were equal to the frequencies expected, indicating that the variables were independent of each other. Even though 95 percent of the males entering Stout in 1965 planned to major in industrial arts, the difference between the persisters and the dropped students and the number of high school units earned in industrial arts was not significant. Total high school units earned were also found to be not significant, and the null hypothesis (2) was accepted.

The analysis of high school class rank and size of high school class is shown in table 4.

Insert Table 4 about here

Table 4 shows that the persisters and dropped students were significantly different in high school class rank, thus rejecting the null hypothesis (3) of no difference. There was no difference found in the size of the high school class and the null hypothesis (4) was accepted.

Table 5 draws a clearer picture of the high school class rank variable.

Insert Table 5 about here

Over 30 percent of the persisters, and only 2.2 percent of the dropped students, ranked in the top quarter of their classes. Seventy-three percent of the persisters and 33.8 percent of the dropped students ranked in the upper half of their high school classes. Less than 2 percent of the persisters and more than 14 percent of the dropped students ranked in the lower quarter.

Table 6 compares the American College Test standard composite scores of the persisters and the dropped students.

Insert Table 6 about here

The mean score for persisters on the American College Test standard composite scores was 20.5, while the dropped student mean was 18.5. Even so, the two groups were not found to be significantly different on ACT scores and the null hypothesis (5) was accepted.

Discussion

The results of this study support the mass of previous research indicating that rank-in-class is the best single predictor for success in college. Conversely, almost 34 percent of the dropped students in this study ranked in the upper half of their high school classes, raising questions pertaining to what was responsible for their failure, and if the University may have contributed to it. Other findings in this study tend to indicate that the number of units earned in mathematics and science do have an effect upon the success of Stout students. According to information disseminated by the University to students and high school counselors, male students should have at least 2 units each of mathematics and science to be insured of adequate preparation for success. This study implies that these suggestions are on the low side and need to be generated upward.

One of the limitations of this study was the lack of time and resources to delve further into the quality of high school subjects. More research in this area is needed as well as in such theoretical areas as motivation and advisement.

The staff at Stout State University and the counselors of the feeder high schools should be made aware of the

significant findings which were noted in this study. Efforts should also be continued to discover the characteristics and preparation which best prepare a student for college attendance, and to uncover what experiences the University can offer to enhance his success.

TABLE 1

Male Freshman Enrollment
and Size of Sample by Categories.
Stout State University, Fall 1965.

	N	%
New Freshman Total	530	100
Persisters	214	36.6
Dropped	133	25.1
Voluntary Withdrawals	203	38.3

TABLE 2

Chi Square Analysis: Relationship Between 214 Persisters and 133 Dropped Students in Terms of High School Units Earned.

Criterion	No. of units & combinations	df	X^2	Needed to be significant at .05
ENGLISH	4 more Less than 4	1	2.282	3,841
MATHEMATICS	1 to 4	3	24.916*	7.815
SOCIAL SCIENCE	1 to 4	3	FO= FE**	
SCIENCE	1 to 4	3	15.710*	7.815
INDUSTRIAL ARTS	1 to 4	3	1.053	7.815
TOTAL UNITS	16 to 23	7	8.800	14.067

*Significant at .05 level
* *FO= FE indicates variables are independent of each other.

TABLE 3

Percentages: Relationship Between 214 Persisters and 133 Dropped Students In Terms of High School Units.

Criterion	Combinations	Persisters	Dropped
English	4 & up	92	85
	Less than 4	.08	15
Mathematics	3 & up	36	17
	Less than 3	64	83
Social Science	3 & up	83	83
	Less than 3	17	17
Science	3 & up	59	33
	Less than 3	41	67
Industrial Arts	3 & up	64	67
	Less than 3	36	33

TABLE 4

Chi Square Analysis: Relationship Between 214 Persisters And 133 Dropped Students

Criterion	Combinations	df	X^2	Needed to be sig. at .05 level
RANK IN HIGH SCHOOL CLASS	Lower ¼ to Top ¼	3	72.874*	7.815
Size of High School Class	Less than 100 to 500+	5	6.68	11.070

*Significant at .05

TABLE 5

Percentages: Relationship between 214 Presisters and 133 Dropped Students in terms of Class size and Class rank.

Variables	NUMBER Persisters	NUMBER Dropped	PERCENT Persisters	PERCENT Dropped
RANK				
Top 1/4	65	3	30.3	2.2
Top 1/2	158	45	73.3	33.8
Top 3/4	210	114	98.1	85.7
Lower 1/4	4	19	1.9	14.3
TOTALS	214	133	100	100
SIZE of H. S. CLASS				
0 to 100	56	29	26.1	21.8
100 to 200	46	29	21.5	21.8
200 - 300	49	30	22.9	22.5
300 - 400	23	9	10.8	6.8
400 - 500	14	9	6.5	6.8
Over 500	26	27	12.2	20.3
TOTALS	214	133	100.0	100.0

TABLE 6

t Test of significance Between American College Test Standard Composite Scores for Persisters and Dropped Students.

	N	$\bar{X}$	t
Persisters	212	20.5	.95
Dropped	132	18.5	

Not significant at .05 level

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